Sleep Pattern and Work Performance among Internship Nursing Students

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Abstract

Aim: The aim of this study was to assess sleep pattern and work performance among internship nursing students. This cross-sectional descriptive study was carried out on a sample of 200 internship nursing students during their work in Ain Shams university hospitals.

Methodology: Data collection tools included an interview questionnaire sheet, which included age, sex, marital status and socioeconomic status. And Pittsburgh Sleep Quality Index (PSQI) as an instrument used to measure the quality and patterns of sleep in adults. It differentiates "Poor" from "Good" sleep by measuring seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, and sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. The client self rates each of these seven areas of sleep. Observation checklist, to assess quality of nurses' performance.

Results: The results clarified that most of the study sample were females (71.5%) whose age 21 years (64%) and 13% of them were married. It also indicated that 4% of the study sample took medications to help them fall asleep and 37% of them had trouble staying awake while driving or engaging in social activities during the past month, while 36.5% of them didn't have troubles staying awake while engaging in social activities. On the other hand 90% of the study sample has Poor pattern of sleep quality with a mean 9.4, while only 10% of them had good sleep pattern. The study demonstrated that 76% of the study sample had satisfactory work performance in supporting patient's anxiety and 69% of them had satisfactory level in speaking with understandable language to the patient, while 88.5% had unsatisfactory work performance as a psychosocial individual in the task of using opportunities for patient teaching. The study also illustrated the relation between sleep pattern and work performance of the study sample, it indicated that about 86% of the study sample had poor sleep quality and unsatisfactory work performance. The study concluded that internship nursing students had poor sleep quality and unsatisfactory level of work performance regardless their gender. Moreover, the major impairment in their performance appeared in the psychosocial dimension. .Overall, the effect of poor quality of sleep negatively affected concentration, working memory and executive functions, also it affects communication with other people as colleagues and patients.

أنماط النوم والأداء الوظيفى بين طلاب امتياز التمريض

الخلفية: إن طلاب امتياز التمريض هم فئة مميزة ومتفردة حيث أن لديهم عبء دراسى ومتطلبات عملية وأكاديمية عديدة، وقد ينتج عن هذه الأعباء بعض العادات الصحية السيئة مثل عدم انتظام النوم وعدم اخذ القسط الكافى من الراحة. ونظرا للاحتياج الشديد إلى الرعاية التمريضية فان هؤلاء الطلاب يقضون أوقات كثيرة فى العمل وتقديم الرعاية للمرضى مما ينتج عنه خلل واضح فى أنماط نومهم وربما خلل فى كفاءة العمل أيضا، وبالتالى فمن المهم تقييم حجم هذا الخلل بين هؤلاء الطلاب والتعرف على العوامل ذات الصلة.

عينة البحث: تضمنت هذه الدراسة كل طلاب الامتياز المتاحين بكلية التمريض جامعة عين شمس لعام ٢٠١٢ وهم عبارة عن ٢٠٠ طالب وطالبة.

الأدوات: استمارة المقابلة الشخصية للتعرف على الخصائص الديموجرافية والاجتماعية والاقتصادية لطلاب امتياز التمريض، مقياس بتسبرج لكفاءة النوم، مقياس الأداء الوظيفى

النتائج: أسفرت نتائج الدراسة عن أن غالبية عينة الدراسة كانوا إناثا إناثا (٧١,٥%) تتراوح أعمارهم بين (٢١- ٢٤) سنة ووجد أن ١٣% من هؤلاء الطلاب متزوجين، ووجد أن ٩٠% من الطلاب لديهم نمط سئ من كفاءة النوم بينما ١٠% منهم كان لديهم نمط جيد من كفاءة النوم، وتبين أن نمط النوم له علاقة ذات دلالة إحصائية بالنوع، وتبين ان ٩٥% من اجمالى عدد الطلاب لديهم مستوى غير مرضى للأداء الوظيفى حيث يظهر هذا الخلل بوضوح فى جزئية تعامل الطالب كفرد اجتماعى مع الآخرين (٩١,٥%)، يليه خلل فى عملية التواصل مع المريض (٨٧,٥%) ثم خلل فى تقييم حالة المريض بنسبة ٥٨%، وتبين من النتائج أن ٨٩,٥% من الطلاب كان لديهم مستوى أداء مرضى فيما يختص بالحفاظ على أمان المريض، أيضا وجد أن ٥١,٥% كان لديهم مستوى أداء مرضى فى المساهمة فى نظافة المريض بينما ٥٤,٥% من الطلاب لديهم مستوى أداء غير مرضى فى الحفاظ على نظافة الوحدة التى يعملون بها، وأن ٧٧,٥% من الطلاب كانوا يراجعون اسم المريض قبل إعطاءه الدواء و٨٠,٥% يراجعون اسم الدواء قبل إعطاءه للمريض بينما ٨٤,٥% من الطلاب لايحضرون الدواء فى مكان مناسب بينما ٢٢% من الطلاب لا يستخدمون الوعاء المخصص للتخلص من النفايات الحادة، وأخيرا أوضحت النتائج أن ٨٦% من الطلاب لديهم نمط نوم سئ ومستوى غير مرضى للأداء الوظيفى.

Introduction:

Sleep is an active, repetitive and reversible state of perceptual disengagement from and unresponsiveness to the environment. Sleep is a critical part of maintaining overall health, It does not only give the body a chance to rest, but it also allows for the mind to build pathways necessary to learn and create memories. Neglecting to get the recommended amount of sleep per night has a negative impact on next day functioning (Frederickson et al., 2004)

Blachowicz and Letizia, (2006) added that sleep is "An active physiologic process that is fundamentally necessary for well-being and optimal functioning" of the human body.

A common myth is that people can learn to get by on little sleep (Such as less than 6 hours a night) with no adverse consequences. Research suggests that adults need at least (7- 8) hours of sleep each night to be well rested. Also more than one-third of adults report daytime sleepiness so severe that it interferes with work and social functioning at least a few days each month. (Ohida et al., 2009). About 30% of the total population in Egypt suffers from sleep disturbances as 1 of every 3 people has sleep disorder (International Sleep Center, 2009).

Insufficient sleep might be caused by an interaction of intrinsic (e.g., puberty, circadian or homeostatic changes) and extrinsic factors (e.g., early school start times, social pressure, academic workload) leading to later bedtimes, while getting up times remain unchanged (Ohayon et al., 2002). The sleep debt (sleep loss) may be significant enough to impair decision-making, initiative, integration of information, planning and plan execution, and vigilance, The effects of sleep loss are insidious and until severe, are not usually recognized by the sleep-deprived individual (Yang CM et al.,2005).

Chronic sleep loss may lead to deterioration of mood and motivation; decrease in attention, energy, and concentration; and an increase in fatigue, irritability, tension, anxiety, and depression. Individuals suffering from sleep deprivation may have an increased incidence of psycho physiological problems such as stomach problems, menstrual irregularities, headaches, and increased muscle tension. Any one of these consequences of sleep deprivation can seriously affect productivity and performance. (Pinell, 1999).

Several studies have shown that failure to obtain adequate sleep is an important contributor to medical error. Although most studies have focused on measuring the effects of sleep deprivation on the performance of interns and resident physicians, sleep disturbances also has adverse effects on the performance of hospital staff nurses. In addition, nurses who fail to obtain adequate amounts of sleep are also risking their own health and safety (Owens, 2007).

Significance Of The Study:

Sleep disturbances among nurses represent highly common phenomena that, in severe forms, can interfere with daily activities and work performance. It is estimated that more than 25% of nurses experience significant sleep problems during the day. National sleep disorders research reported that 12 hour shifts are associated with less effective performance and There is a very large, strong body of evidence showing that insufficient sleep has adverse effects on cognition, performance, and mood of registered nurse (Ohida et al., 2009). This study aimed to assess sleep pattern and its effect on work performance among internship nursing students hopefully that this study would generate attention and motivation for further investigation in this topic.

Aim of the study:

This study aimed to assess sleep pattern and work performance among internship nursing students.

Research Questions:

1. What is the pattern of sleep among internship nursing students?
2. Does sleep pattern affect work performance among internship nursing students?

Hypothesis:

Internship nursing students have poor sleep quality and unsatisfactory level of work performance.

Subject And Methods:

The methodology used in carrying out the study is described under four designs, namely technical, operational, administrative, and statistical designs.

1. Technical Design:
   a. Research Design: A descriptive research design was adopted to fulfill the purpose of the study. It helps the researchers to describe and document aspects of a situation as it naturally occurs. As well, this design helps to establish a database for future research.
   b. Study Setting: This study was carried out in Ain Shams University Hospitals.
   c. Subjects of the study: A convenient sample of 200 internship nursing students during their work in Ain Shams University Hospitals, were selected according to the following criteria:
      ¤ Age: Above 21 years.
      ¤ Sex: Both sexes (Male and Female).
      ¤ Free from any physical or psychological disease.
      ¤ Oral consent for participation.
   d. Tools of data collection:
   e. Tools: Tools used in the study were:
      ¤ An interview questionnaire sheet (Appendix 1): This sheet was constructed by the researchers in simple Arabic language after reviewing literature, which includes age, sex, marital status and socioeconomic status.
      ¤ Pittsburgh Sleep Quality Index (PSQI) (Appendix 2): The Pittsburgh Sleep Quality Index (PSQI) is an effective instrument used to measure the quality and patterns of sleep in adults. It differentiates "Poor" from "Good" sleep by measuring seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. The client self rates each of these seven areas of sleep. It was developed by Daniel J. Buysse, Charles F. Reynolds, Timothy M. Monk, Susan R. Berman, and David J,1989.
      Scoring System: Scoring of the answers is based on a (0 to 3) scale, whose sum results in a global score that may range from zero to 21, whereby 3 reflects the negative extreme on the Likert Scale. A sum below 5 indicates a good sleeper while a global sum of 5 or greater indicates a "Poor" sleeper. Although there are several questions that request the evaluation of the client's bedmate or roommate, these are not scored, nor reflected in the attached instrument.
      ¤ Observation checklist for work performance: Observation checklist

was developed based on review of related literature (Schwirian, 1978; Houfeky, 1992; Ghadery, 1995; Haussman, 1997; Said, 2000). Its purpose was to assess quality of nurses' performance. The observation checklist (Appendix 1) contained 45 items categorized under 8 main dimensions which are: psychosocial interaction (12 items), communication (7 items), professionalism (3 items), general patient care (6 items), dressing (7 items), patient status (6 items), vital signs(3 items) and medication (5 items).

Scoring System: Observation checklist was scored based on the basis of done or not done for each activity. Done scored (1 point), not done scored (zero) and not applicable were omitted from the calculation. Minimum satisfactory level of performance was 75% .

2. Operational Design:

a. Pilot Study: A pilot study was conducted on 20 Internship nursing students who represented 10% of the total sample in order to ensure the clarity of questions, applicability of the tools, test their ability to elicit the desired information and the time needed to complete them according to the results of the pilot study, no changes were needed and tools were used.

b. Field Work: Once official permission was granted from the research committee, and from the dean of faculty of nursing Ain Shams University to proceed with the study, the researcher initiated data collection. Internship nursing students who met the inclusive criteria were identified. Data collection of this study was carried out in the period from June 2012 to August 2012 in the different units of Ain Shams University Hospitals. Data were collected 4 days per week on Sundays, Mondays, Tuesdays and Wednesdays, from 8.00 a.m. to 2.00 p.m. The researcher met 200 internship nursing students who met the inclusive criteria, and agreed to participate in the study. The researcher introduced herself to all students who agreed to be included in this study and voluntary participation and confidentiality was assured by the researcher for each student through clarifying that all information will be used for scientific research only. The researcher explained the purpose of the study to each internship nursing student included in the study. During the first and second months, the researcher filled the performance observation checklist through her observation of each internship nursing student for three times during their work with the patients in different hospital units and then the mean score was taken. Every day the researcher observed about 15 internship nursing student, then, in the third month, each internship nursing student filled in the Pittsburgh Sleep Quality Index (PSQI) by him/ her self, which assessed the quality and patterns of sleep in the last month. Filling in this tool lasted from (5-10) minutes for each subject included in the study.

3. Administrative Design: An official letter requesting permission to conduct the study was submitted from the Dean of the Faculty of nursing, Ain Shams University to all nursing administrators in charge. This letter included the aim of the study.

4. Statistical Design: The statistical analysis of data was done by using excel program and the statistical package for social science (SPSS) program version 12. First part of data was descriptive data which were revised, coded, tabulated and statistically analyzed using the proportion and percentage, the arithmetic mean (X') and standard deviation (SD). The second part was analytical statistics to test statistical significant difference between two or more groups. For qualitative data, Chi square test (X^2) and p-value were used to test associations among the variables.

Results:

Table (1) clarifies that most of the study sample were females (71.5%), and the age (21- 23) years represented 64% of the total sample, while 13% of the study sample were married.

As cleared by table (2) that 90% of the study sample has Poor pattern of sleep quality with a mean 9.4, while only 10% of them has good sleep pattern.

Concerning the Relation between sleep pattern and socio-demographic characteristics of the internship nursing students, table (3) points to a highly statistical significance relation between gender and sleep pattern (P< 0.001).

As cleared by table 4 that less than three quarters (71.0%) of female internship nursing students had unsatisfactory performance versus 24% of male students, with highly statistically significant difference (p< 0.001). While those aged (21- 23) years showed unsatisfactory performance represented 62.5% compared to those aged (24- 25) years with a satisfactory performance (3.5%) and 32.5% unsatisfactory performance, with a statistically significant difference (p< 0.05).

Table 5 displays the relation between sleep pattern and work performance of the study sample. It indicates that 86% of the study sample having poor sleep quality showed unsatisfactory work performance with no statistically significant relation (p> 0.05).

Table (1) Socio-demographic characteristics of internship nursing student (n=200).

Items	No	%
Age (In Years)		
21-23	128	64.0
24-25	72	36.0
Mean ± SD= 23.1 ± 1.1		
Gender		
Male	57	28.5
Female	143	71.5
Marital Status		
Married	26	13.0
Single	174	87.0
Social Level		
Low	13	6.5
Medium	164	82.0
High	23	11.5

Table (2) Sleep pattern among internship nursing students (n=200).

Item	Good Sleep		Poor Sleep		Range	Mean	SD
	NO	%	NO	%			
Sleep Quality	20	10.0%	180	90.0%	1- 17	9.4	3.4

(Table 3) Relation between sleep pattern and socio-demographic characteristics of the internship nursing students (n=200).

Items	Sleep Pattern				X^2	P-Value	Sig
	Good Sleep		Poor Sleep				
	No	%	No	%			
Age							
21-23	9	4.5	119	59.5	3.5	> 0.05	NS
24-25	11	5.5	61	30.5			
Gender							
Male	11	5.5	46	23.0	7.6	< 0.001	HS
Female	9	4.5	134	67.0			

Table (4) Relation between socio-demographic characteristics of the internship nursing students and their work performance (n=200).

Items	Performance				X^2	P-Value	Sig
	Satisfactory		Unsatisfactory				
	No	%	No	%			
Age							
21-23	3	1.5%	125	62.5%	5.3	< 0.05	S
24-25	7	3.5%	65	32.5%			
Gender							
Male	9	4.5%	48	24.0%	19.5	< 0.001	HS
Female	1	0.5%	142	71.0%			

Table (5) Relation between sleep pattern and work performance of the internship nursing students (n=200).

Items	Sleep Quality				X^2	P-Value	Sig	R
	Good Sleep		Poor Sleep					
	No	%	No	%				
Work Performance								
Satisfactory	2	1.0%	8	4.0%	1.2	> 0.05	NS	-0.1
Unsatisfactory	18	9.0%	172	86.0%				

Discussion:

The aim of the present study was to assess sleep pattern and work performance among internship nursing students and determine the relationship between sleep pattern and work performance. The study was carried out on 200 internship nursing students from both sexes, and age above 21 years. The results indicated that there is a strong relation between sleep quality and the level of their performance, this is strongly supported by Pagel, Forister and Kwiatkowki (2007) in their study as they have reported an adverse affect on academic performance when students experience difficulties is some aspect of sleep.

Correlations between sleep patterns, and academic performance also have been reported by Singleton and Wolfson (2009). They conducted surveys on nursing students with a random sample of students and they found that sleep patterns could be directly correlated with grade-point average (GPA).

The socio demographic characteristics of the present study sample confirm what the literature shows about the predominance of the female gender, emphasizing a trend to the "Feminization" of the workforce in the health segment (Costa et al., 2000) as in the present study less than three quarters (71.5%) of the study sample were females, while more than quarter only (28.5%) were males.

According to this study results, gender doesn't affect work performance as the total sample was 200 nursing students, only more than quarter (28.5%) of them were males and less than three quarters (71.5%) of them were females, having unsatisfactory work performance and this clears that both sexes have unsatisfactory work performance regardless their gender. This finding was in accordance with that of a study done by Claudia et al. (2008) on 30 nurses working in long-term care institutions in the city of San Paulo, Brazil, 40% of them were males and 60% of them were females and results indicate that gender doesn't significantly affect levels of their work productivity.

Another study suggests that with increasing sleepiness, individuals demonstrate poorer performance despite increased effort, and they may report indifference regarding the outcome of their performance (Sleep Medicine, 1996). This is in agreement with the current study findings which revealed that, poor sleep (fewer hours slept) showed a decline in work performance.

The current study results revealed that most of the study sample (91.5%) had psychosocial impairment related to poor sleep quality. In congruence with this findings, Hussein et al.(2008), in their study which conducted to describe the effect of sleep disorders on Jordanian nurses working in critical care units, the results concluded that they had less significant physical workload but greater mental workload, 78% of nurses whose age less than 30 years have effect on psychosocial aspect, 56% of them were females and 43% were males.

The current study results cleared that slightly less than quarter (32%) of the study sample had a non simple problem in keeping up enthusiasm to get things done. This is on the same line with a study done on medical students of Iran University to determine the prevalence of sleep disorders in medical students and its effect on quality of work and education by Marzieh et al. (2009), findings showed that more than half of the study sample had problem to keep enough enthusiasm to get social activities done one to five times per week. Similar findings are also reported by Inhauser et al. (2008), in a study done on nursing professionals working at the Intensive Care Units in which 70% of the study sample presented day time sleepiness.

The current study results indicated that the majority of the study sample has poor sleep quality and unsatisfactory work performance. This could be due to that a large number of the study sample is working night shifts in private hospitals, while working in the university hospitals, so this might have affected their concentration and functioning in the next day.

In the current study, more than two fifth (43%) of the study sample reported problem of waking up early or in the middle of the night, this may be due to the stress and anxiety associated with clinical rotations and work load. Additionally, hospital shifts are scheduled around the clock and often begin early in the morning. So, this could be a contributing factor to the interrupted sleep and waking up early.

Regarding the question of waking up to use the bathroom, the current study found that less than third (30%) of the study sample reported trouble sleeping because they have to get up to use the bathroom once per week. This could be influenced by consumption of fluids close to bed time. If the students consume caffeinated drinks, the frequency of urination will also increase. Caffeine is often used as a study aide and to assist students in staying awake. Using caffeine for these purposes will also contribute to more frequent trips to the bathroom. Added to that Carskadon (1990) . Mentioned that nurses who are heavily involved in work, community activities and other responsibilities appear to be at greater risk for increased likelihood of stimulant use (including caffeine & nicotine) effects of sleepiness than those who are less involved in activities and who work fewer hours.

Moreover, in the current study, the frequency of feeling too cold reported by more than two fifth (44%) of the internship nursing students has several possible explanations. For example, nursing students are more frequently residents in the student residence halls on campus. These residence halls are very wide and open also there is a shortage in blankets and warming materials. This may explain why these students reported feeling too cold during the night. On the other hand, the fact of feeling too hot, was reported as a problem by less than quarter (23%) of the nursing students, suggesting that the room temperature can be an important determinant of the quality and quantity of sleep. In environments of high temperature, periods of sleep are characterized by increased wakening and changes in sleep architecture as identified by Voyer et al. (2006). This factor was reported as disturbing the sleep in a study performed on nurses in Italy, a country of milder climate than Brazil, where complaints were presented by only 6% of the nurses (Gentili et al., 2007).

According to the present study findings, only minority (5.5%) of the study sample had trouble sleeping because they had pain three times a week or more. The finding is in agreement with Crowley et al. (2000), who found that 9% of nurses working in Canada expressed having pain three times a week or more, this low percentage may be due to the young age of the study sample (above 21 years), while the occurrence of pain may be due to inadequate periods of rest and relaxation.

The use of sleep medication three times per week or more was only reported by a minority (4%) of the study sample, representing a very low percentage, the use of this type of medication can hinder cognition and psychomotor aspects, such as gait.

Conclusion:

Based on the main study findings, it is concluded that internship nursing students have poor Sleep quality and unsatisfactory level of work performance regardless their gender .But it was found that age affect the level of their work performance .Moreover, the major impairment in their performance appears in the psychosocial dimension. Also the study found that most students sleep about 7 hours only during the day and this period may be intermittent in some cases. Overall, the effect of poor quality of sleep negatively affects concentration, working memory and executive functions, also it affects communication with other people as colleagues and patients

Recommendation:

On the basis of the present study, the following recommendations can be drawn:

1. The academic community should support nursing students and emphasize their importance of taking care of themselves in order to make effective helping clients with health related problems.

2. The continued use of 12-hour shifts cannot be recommended given the current working conditions, including the almost daily need for nurses to stay beyond the end of their scheduled shift, the frequent absence of breaks during the workday, and the higher risk of errors associated with 12-hour shifts.

3. Caffeine should not be consumed on regular basis or when alert. Instead, caffeine consumption should occur only at the beginning of a shift or about an hour before an anticipated decrease in alertness e.g., between 3 a.m. and 5 a.m. To reduce the possibility of insomnia, caffeine consumption should stop at least 3 hours before a planned bedtime

4. Educational programs are recommended in order to teach internship nursing students appropriate sleep hygiene measures which help them to avoid sleep disorders and obtain a high sleep quality.

5. Sleep medications should be avoided unless prescribed by doctor for a short period.

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